

Remarks

I. Summary of the Office Action

Claims 1-26 were pending this application.

Claims 1-7, 11, 13-21 were rejected under 35 U.S.C. § 102(e) as being anticipated by Oughton Patent 6,753,622 (hereinafter "Oughton"). Claims 8-10, 12, and 22-26 were rejected under 35 U.S.C. § 103 as being unpatentable over Oughton.

II. Summary of Applicant's Reply

Applicant has amended the specification to correct minor clerical errors.

Applicant has amended claims 1, 5-7, 13, 22, and 26 to more particularly define the invention. Applicant has deleted claim 21 without prejudice. Applicant has added new claim 27. No new matter is added by the amendments or the new claim.

Applicant respectfully traverses each of the Examiner's rejections.

III. Applicant's Reply to the 102 Rejections

Claims 1-7, 11, 13-21 were rejected under 35 U.S.C. § 102(e) as being anticipated by Oughton. Applicant respectfully traverses this rejection.

A. Applicant's Invention

Applicant's invention is directed to universal input circuitry, systems and methods for connecting one or more backup power systems to an uninterruptible power supply (UPS) system. In UPS systems, it is desirable to provide a substantially constant supply of power to a load, even during times when a primary power source fails. In a primary mode of operation, power may be provided from a primary power source such as utility power. When the primary power source fails, a secondary or backup source of power may provide power to the load in a backup mode of operation. There may be many different types of backup power systems, such as for example, batteries, motor-generators, flywheel energy conversion systems, variable speed constant frequency (VSCF) systems, and compressed air storage backup energy systems that can be used to provide backup power to the load. Because many different backup power systems are available, this can create difficulties in interfacing those backup power systems to the UPS system. Applicant's invention advantageously alleviates those difficulties by providing

universal input circuitry that is configurable to operate in connection with one or more backup power systems connected to the input circuitry. Thus, when a user connects a backup power system to the UPS system, there is no need for the user to perform time consuming and costly interconnections because the universal input circuitry is automatically configured by a software unit to operate in connection with that backup power system.

B. Independent Claim 1

Independent claim 1 refers to universal uninterruptible power supply (UPS) input circuitry configured for connecting a backup power system selected from one or more different types of backup power systems to a UPS system. Independent claim 1 specifies a diode bridge coupled to receive power from a selected one of the backup power systems, a boost converter coupled to receive the power from the diode bridge, and an auxiliary converter coupled to the selected backup power system. Claim 1 specifies a software unit coupled to the boost circuitry and the auxiliary circuitry, wherein the software unit controls the operation of the boost circuitry and the auxiliary circuitry based on the selected backup power system.

Oughton refers to a UPS system for providing power to a load. Oughton, however, fails to show or suggest a system capable of automatically interfacing a selected backup power system via input circuitry to a UPS system such that the selected backup power system can provide power to a load on demand. Such failure to show or suggest applicant's claimed invention is apparent for several reasons.

First, Oughton fails to show or suggest a diode bridge coupled to receive power from the selected backup power system, as specified in claim 1. Rather, in FIGS. 1 and 2 of Oughton, it is seen that the rectifier circuitry 110 is coupled to an AC input port 101a, 101b and such input port is configured to be connected to an AC power source 10, such as an AC utility line, that produces AC voltage V_{ACin} (Oughton column 4, lines 33-35). This is contrary to applicant's claimed feature of being connected to a selected backup power system.

In fact, Oughton does not show or suggest any ability to connect to and operate with any one of many different types of backup power systems. Examples of differences between Oughton and applicant's claimed invention can be found by contrasting applicant's FIG. 1 to Oughton's FIGS. 1 and 2. For example, box 50 of applicant's FIG. 1

shows many different backup power systems that can be coupled to the diode bridge, as specified in claim 1, whereas Oughton only shows an AC input port, which is coupled to an AC utility line. Further evidence of differences between applicant's claimed invention and Oughton is illustrated by the fact that applicant's FIG. 1 shows a utility input being connected to the UPS system 10, not to the diode bridge. Whereas in Oughton, the utility input, not a backup power system, is connected to the rectifier 110.

Accordingly, for at least the reason that Oughton fails to show or suggest a diode bridge that is coupled to receive power from the selected backup power system, applicant respectfully requests that the rejection of independent claim 1 be withdrawn.

Second, Oughton fails to show or suggest an auxiliary converter coupled to the selected backup power system, as specified in claim 1. The Examiner contends that the second power transfer control circuit 220 of FIG. 3 (of Oughton) is an auxiliary converter that is coupled to the selected backup power system (Office Action, page 2). Applicant respectfully disagrees. As can be seen in FIG. 3, circuit 220 (both top and bottom circuit 220) is coupled to the output of rectifier 210 and to DC input port 215, not to

any power source that is connected to the input side of rectifier 210.

Accordingly, for at least the reason that Oughton fails to show or suggest an auxiliary converter coupled to the selected backup power system, applicant respectfully requests the rejection of independent claim 1 be withdrawn.

Third, Oughton fails to show or suggest a software unit coupled to the boost circuitry and the auxiliary circuitry that controls the operation of the boost circuitry and the auxiliary circuitry based on the selected backup power system. Oughton's control circuitry (e.g., control circuitry 126 or 226) can control circuitry such as current control circuitry 122, switching circuit 122, or transistor Q1, but such control is not dependent on which type of backup power system is connected to the UPS system. Rather, Oughton provides control based on conditions existing in the UPS system. For example, when the AC input voltage V_{ACin} meets a predetermined criteria, the control circuit 126 may decouple the DC input port 102a, 102b from the input of current control circuit 122, thereby operating in a first, AC-powered mode of operation (Oughton, column 5, lines 40-45). When the AC input voltage V_{ACin} fails to meet that predetermined criteria, the control circuit 126 couples DC input port 102a,

102b to the current controlled circuit 122, thereby placing the UPS system in a second, DC-powered mode of operation (Oughton, column 5, lines 45-52).

The Examiner contends that rectifier circuit 110 discloses applicant's software unit because rectifier circuit 110 includes processing circuitry that executes instructions in the form of computer software or firmware. Such processing circuitry, however, is for controlling the switching devices of the rectifier. There is no showing or suggestion that such processing circuitry is used to control or operate other circuitry such as boost circuitry or auxiliary circuitry based on which backup power system is connected to the UPS system.

Accordingly, for at least the reason that Oughton fails to show or suggest a software unit coupled to the boost circuitry and the auxiliary circuitry that controls the operation of the boost circuitry and the auxiliary circuitry based on the selected backup power system, applicant respectfully requests that the rejection of independent claim 1 be withdrawn.

In view of the foregoing, applicant respectfully submits that independent claim 1 is patentable over Oughton and that dependent claims 2-7 and 11 are also patentable at

least because they depend from independent claim 1.

C. Independent claim 13

Independent claim 13 is directed to a method for configuring universal uninterruptible power supply (UPS) input circuitry to connect a backup power system selected from one or more different back-up systems to a UPS system. Claim 13 specifies coupling the selected backup system to the input circuitry. Claim 13 has been amended to specify providing an indication of which backup system is selected and configuring the input circuitry to operate in conjunction with the selected backup system based on the indication. Claim 13 specifies operating the input circuitry such that power is substantially continuously provided to a load.

On pages 4 and 5 of the Office Action, the Examiner states:

For method claims 13-20, note that under MPEP § 2112.02, the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. *In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Therefore the previous rejections based on the apparatus will not be repeated.

Applicant respectfully submits that the prior art as described in Oughton does not perform the method claimed in independent claim 13. This is apparent for at least the reasons discussed above in Section III.B because Oughton's prior art device is not the same as applicant's universal UPS circuitry as described in the specification for carrying out the claimed method.

Moreover, the method of configuring the universal UPS input circuitry to operate in connection with a selected backup power system is not shown or suggested by Oughton. Applicant's method provides for any one of several different backup power systems to be coupled to the universal UPS input circuitry, and regardless of which backup power system is coupled thereto, the universal UPS input circuitry is operated such that power is substantially continuously provided to the load. For example, assume that a user has a choice in connecting a battery, a motor-generator, a flywheel, or another backup power system to the UPS input circuitry, and the user connects a motor-generator. The UPS input circuitry is configured to operate in connection with the motor-generator and is operated as such. Further to the example, if the user replaces the motor-generator with the flywheel backup system, the UPS input circuitry may be

configured to operate in connection with the flywheel backup system. Oughton fails to show or suggest such universal interconnectivity with various types of backup power systems.

Accordingly, for at least the reasons that applicant's circuitry is different from Oughton's circuitry and that Oughton fails to show or suggest configuring and operating UPS input circuitry based on the backup power system connected thereto, applicant respectfully submits that independent claim 13 is patentable over Oughton and that dependent claims 14-20 are also patentable at least because they depend from independent claim 13.

IV. Applicant's Reply to the 103 Rejections

Claims 8-10, 12, and 22-26 were rejected under 35 U.S.C. § 103 as being unpatentable over Oughton. Applicant respectfully traverses this rejection.

A. Claims 8-10 and 12

Claims 8-10 and 12 are patentable at least for the reason they depend from independent claim 1.

In the event claim 12 is not found to be patentable, applicant respectfully requests that a reference be cited to support Examiner's use of Official Notice. (MPEP § 2144.3)

B. Independent Claim 22

Independent claim 22 is directed to an uninterruptible power supply (UPS) system which is configurable for connection to at least one backup power system. The UPS system includes universal UPS input circuitry having first circuitry required for connecting said at least one backup power system to said UPS system. Claim 22 has been amended to specify a plurality of slots configured to receive additional circuitry such that said universal UPS input circuitry can interconnect and operate in connection with at least one other backup power system that is different than said at least one backup power system coupled to said first circuitry.

On page 7 of the Office Action, the Examiner contends that Oughton discloses each feature of the claimed invention, but admits that Oughton does not show universal UPS input circuitry having first circuitry (or a third backup power system that can be coupled to the UPS system without utilizing said UPS input circuitry). The parenthetical refers to dependent claim 26. However, the Examiner contends that:

it would have been obvious to use the first circuitry ... as the courts have held that change in shape or configuration, without any criticality, is within the level of skill in the art as the

particular configuration claimed by applicant is nothing more than one of numerous configurations that a person having ordinary skill in the art will find obvious to provide using routine experimentation based on its suitability for the intended use of the invention.

Applicant respectfully disagrees with the Examiner's rejection and obviousness contention.

Oughton fails to show or suggest a plurality of slots configured to receive additional circuitry such that the universal UPS input circuitry can interconnect and operate in connection with at least one other backup power system that is different than said at least one backup power system coupled to said first circuitry. This claimed feature may promote modular construction of the UPS input circuitry. That is, when a predetermined backup system is connected to the UPS input circuitry, only the circuitry required for configuring and operating the UPS input circuitry in connection with that predetermined backup system is needed. In addition, the circuitry placed in the slots may be interchangeable, thereby further promoting the ease in which the UPS input circuitry can be configured to operate with other backup power systems that are connected to the UPS input circuitry. (Applicant's specification, pages 22 and 23)

The Examiner contends that the plurality of slots feature is shown in Oughton, but does not show in Oughton

where such features are disclosed. In order to establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art (MPEP § 2143.03). In fact, as stated above, Oughton fails to show or suggest applicant's plurality of slots feature. Therefore, applicant respectfully submits that the Examiner has failed to meet this requirement and requests that the rejection be withdrawn for at least this reason.

The Examiner contends that applicant's claimed "universal UPS input circuitry having first circuitry for connecting said at least one backup power system to said UPS system" is obvious. Again, the Examiner does not indicate where this claimed feature is shown or suggested in Oughton, as required by MPEP § 2143.03. Nowhere in Oughton does it show or suggest anything related to universal input circuitry, nor does Oughton show or suggest having first circuitry of the input circuitry for connecting at least one backup system to the UPS system. In fact, at page 7 of the Office Action, the Examiner admits that universal UPS input circuitry having first circuitry is not shown in Oughton.

Accordingly, for at least the reason that Oughton fails to show or suggest each feature of applicant's claimed invention and that the Examiner has failed to indicate where

in Oughton the claimed features are shown or suggested, applicant respectfully submits that claim 22 is patentable over Oughton. Claims 23-26 are also patentable at least because they depend from independent claim 22.

V. New Claim 27

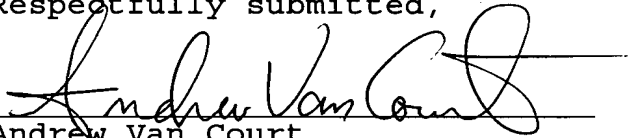
Applicant added new independent claim 27, which is directed to an uninterruptible power supply (UPS) system. The UPS system includes a utility input for receiving AC power that is selectively provided to a load via a switch and universal input circuitry that is configurable to operate in connection with at least one backup power system selected from one or more different types of backup power systems. The UPS system includes inverter circuitry coupled to the load, the switch, and the input circuitry. The UPS system includes a software unit coupled to the input circuitry and the inverter circuitry that configures the input circuitry to operate in connection with the selected backup power system. The software unit controls the flow of power from the selected backup power system to said load by controlling the input circuitry and the inverter circuitry.

Applicant respectfully submits that new independent claim 27, as a whole, is not shown or suggested by Oughton and therefore patentable over Oughton.

VI. Conclusion

The foregoing demonstrates that claims 1-20 and 22-27 are allowable. Applicant respectfully submits that this patent application is in condition for allowance. Reconsideration and allowance are respectfully requested.

Respectfully submitted,



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